

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-8. (Canceled).

9. (Currently Amended) An optical assembly comprising:

i) at least first and second optical components, each having an optical confinement region and an optical axis in use, and at least the first optical component having a substrate and one or more layers defining the optical confinement region; and

ii) a shared substrate,

wherein said first optical component comprises an optoelectronic device which is provided with a bonding surface and is flip chip mounted on the shared substrate by means of said bonding surface and the optoelectronic device first and the second ~~components~~ component are supported by the shared substrate such that their respective optical confinement regions are optically coupled in use, and

wherein at least the optoelectronic device ~~has added thereto~~ is provided with a dielectric spacing layer between the optical axis of the optoelectronic device and the bonding surface, additional to the optoelectronic device, which spacing layer provides the bonding surface for said flip chip mounting of the optoelectronic device, enables electrical contact to be made to the optoelectronic device, and determines the distance from the bonding surface to the optical axis of the optoelectronic device for the first component, when mounted on the shared substrate, to

achieve said optical coupling in use, said spacing layer comprising a glass material having both organic and inorganic components.

10. (Previously Presented) An assembly according to Claim 9 wherein the shared substrate provides a planar surface on which both said first and second components are flip chip mounted to achieve said optical coupling in use.

11. (Canceled).

12. (Currently Amended) An optical assembly according to Claim 9 comprising:

i) at least first and second optical components, each having an optical confinement region and an optical axis in use, and at least the first optical component having a substrate and one or more layers defining the optical confinement region; and

ii) a shared substrate,

wherein said first optical component has a bonding surface and is flip chip mounted on the shared substrate by means of its bonding surface and the first and second components are supported by the shared substrate such that their respective optical confinement regions are optically coupled in use,

and at least the first component further comprises a spacing layer which determines the distance from the bonding surface to the optical axis for the first component to achieve said optical coupling in use, said spacing layer comprising a glass material having both organic and inorganic components, and

wherein said first and second optical components have bonding surfaces, the distance from the bonding surface to the optical axis for the first component being different from the distance from the bonding surface to the optical axis for the second component, the shared

substrate providing a non-planar surface on which both said first and second components are flip chip mounted to achieve said optical coupling in use.

13. (Original) An assembly according to Claim 12 wherein said non-planar surface is provided by a glass material having both organic and inorganic components.

14. (Previously Presented) An optical assembly according to Claim 9 wherein the distance from the bonding surface to the optical axis for the first component is matched to the distance from the bonding surface to the optical axis for the second component to an accuracy of 300 nm or less.

15. (Previously Presented) An optical assembly according to Claim 9 wherein the distance from the bonding surface to the optical axis for the first component is matched to the distance from the bonding surface to the optical axis for the second component to an accuracy of 100 nm or less.

16.-18. (Canceled).

19. (Previously Presented) An optical assembly according to Claim 9 wherein the glass material comprises an inorganic matrix provided at least in part by a metal alkoxide or salt that has been hydrolysed.

20. (Original) An optical assembly according to Claim 19 wherein the metal alkoxide or salt comprises one based on groups 3A, 3B, 4B and 5B of the Periodic Table.

21. (Original) An optical assembly according to Claim 19 wherein the glass material comprises an organic component to modify the inorganic matrix.

22. (Original) An optical assembly according to Claim 21 wherein the glass material is adapted to be processed at temperatures of more than or equal to 400°C.

23. (Original) An optical assembly according to Claim 21 wherein said glass material comprises a thermal- or photoinitiator to initiate polymerisation in the glass material for use in lithographic processing.

24. (Original) An optical assembly according to Claim 21 wherein the glass material is adapted to be processed at temperatures of not more than 200°C.

25. (Original) An optical assembly according to Claim 21 wherein the glass material is adapted to be processed at temperatures of not more than 150°C.

26. (Currently Amended) An optical assembly according to Claim 9 wherein ~~at least one of the first and second components~~ the optoelectronic device comprises a laser diode.

27. (Currently Amended) An optical assembly according to Claim 26 wherein ~~the optoelectronic component comprises a laser diode and~~ the laser diode comprises semiconductor material selected from one or more of the III-V groups of the Periodic Table.

28. (Previously Presented) An optical assembly according to claim 9, the first and second optical components each being flip chip mounted so that its optical confinement region lies between its respective substrate and the shared substrate.

29. (Canceled)

30. (Canceled).

31. (Original) An optical assembly according to Claim 28 wherein the substrate comprised by the first component has different characteristics from the substrate comprised by the second component.

32. (Original) An optical assembly according to Claim 31 wherein the substrate comprised by the first component has a different depth from the substrate comprised by the second component.

33. (Original) An optical assembly according to Claim 9 wherein at least one of the first and second components is provided with an electrical connection by means of its bonding surface.

34. (Canceled).

35. (Currently Amended) An optical assembly comprising:

i) at least first and second optical components, each having an optical confinement region and an optical axis in use, and at least the first optical component having a substrate and one or more layers defining the optical confinement region; and

ii) a shared substrate,

wherein said first optical component comprises an optoelectronic device which is provided with a bonding surface and is flip chip mounted on the shared substrate by means of said bonding surface and the first and second components are supported by the shared substrate such that their respective optical confinement regions are optically coupled in use,

wherein at least the optoelectronic device has added thereto a spacing layer, additional to the optoelectronic device, which enables electrical contact to be made to the optoelectronic device, and determines the distance from the bonding surface to the optical axis for the first component, when mounted on the shared substrate, to achieve said optical coupling in use, said spacing layer comprising a glass material having both organic and inorganic components, and

~~An optical assembly according to Claim 9,~~ wherein an optical cladding layer of the second optical component and a support surface for the optoelectronic component are each provided by areas of the same layer fabricated on the shared substrate.

36. (Original) An optical assembly according to Claim 35 wherein the material of the fabricated layer comprises a hybrid glass material.

37. (Original) An optical assembly according to Claim 35 wherein the fabricated layer is discontinuous.

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38. (canceled).